REMARKS

Claims 44-60 have been added. Claims 1-60 are pending in the application.

Claims 6-9, 11, 12, 16-19, 21, 22, 36-39, 41, and 42 stand rejected under 35 U.S.C. 102(b) as being anticipated by Chau. Claims 1-5, 10, 13-15, 20, 23-35, 40 and 43 stand rejected as obvious in light of Chau in view of Kamath, et al. and Schindler et al. in various combinations. Applicant requests reconsideration of such rejections.

Referring first to claim 1, the claim recites exposing silicon-comprising surface to activated nitrogen to form a peak nitrogen concentration within the silicon-comprising surface of at least 15% (atom percent). Claim 1 is believed allowable over the cited references for at least the reason that the references do not teach or suggest exposing a silicon-comprising surface to activated nitrogen to form a silicon-comprising sureface having a peak nitrogen concentration of at least 15% (atom percent).

The examiner is reminded that claims may be rejected as anticipated by a reference only if each and every element of the claim is set forth with the same level of detail in the reference as is contained in the claim. (M.P.E.P. § 2131, 8th ed.)

As the Examiner has found, the cited references alone neither teach nor suggest the recited element of a silicon-comprising surface having a peak nitrogen concentration of at least 15 % (atom percent).

Furthermore, under M.P.E.P. § 706.02 (j) three basic criteria must be met in combining references. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings. Second, there must be a reasonable expectation of success; and third, the combined references must teach or suggest all of the limitations of the claims. Also, the teaching or suggestion to make the claimed combination, and the

reasonable expectation of success, must both be found in the prior art and not based on the applicant's disclosure.

As stated above claim 1 recites a exposing a silicon-comprising surface to activated nitrogen to form a peak nitrogen concentration within the silicon-comprising surface of at least 15% (atom percent). Applicant submits that there insufficient motivation for combining the cited references to establish this limitation, nor is there a reasonable expectation of success when the references are viewed as a whole.

Chau cursorily discloses the plasma nitridation of a substrate with a power of between 500-2000 watts but makes no mention of the peak nitrogen concentration greater than 5%. Kamath discloses methods for depositing silicon nitride by chemical vapor deposition and mentions the silicon nitride having approximately 20 atomic percent nitrogen. Schindler discloses methods for annealing metal oxides.

To support the combination of Chau and Kamath the Examiner merely states, "It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chau by the activated nitrogen having a concentration of about 20 atomic % as taught by Kamath to reduce tunneling between the transistor gate and the channel region."

The Examiner's attempted motivation for the combination of Chau and Kamath is improper for at least the reason that Chau discloses techniques preparing silicon nitride constructions by nitridation while Kamath discloses the wholly different technique of preparing silicon nitride constructions, deposition. Kamath is squarely directed to depositing a silicon-nitride layer upon a substrate, while Chau is directed at implanting nitrogen into a substrate via nitridation. Chau does not suggest the use of deposition and Kamath does not suggest the use of nitridation. Accordingly, there is no suggestion or

motivation to combine the teachings of Chau with the teachings of Kamath to arrive at the claimed invention.

Furthermore, if there were a motivation or suggestion to combine Chau and Kamath there is certainly no expectation that such a combination would successfully result in the limitations of claim 1. The teachings of Chau are limited to nitrogen atom percentages between 0.1 and 5.0 and powers between 500 and 2000 watts. Nothing in Chau indicates that nitrogen atom contents as high as 15 percent are even attainable by nitridation. The mere mention of nitrogen contents as high as 20 atomic percent in Kamath, in view of Chau, should not be considered anything more than an ambition since it is in the context of deposition, not nitridation. As such, when Chau and Kamath are combined, there is no reasonable expectation that nitrogen atom contents as high as 15 percent can be achieved by nitridation.

Therefore, for at least the reasons that there is no motivation to combine the cited references and, if there was sufficient motivation, there is no expectation of success when they are combined, claim 1 is not obvious in light of Chau and Kamath. Applicant requests allowance of claim 1 in the examiners next action.

Claims 2-5 depend from claim 1, and are therefore allowable for at least the reasons discussed above regarding claim 1.

Referring next to claim 6, a method of forming a transistor devise is provided that in pertinent part recites providing a silicon-comprising surface and exposing the silicon-comprising surface to activated nitrogen for at least about 20 seconds to convert the silicon-comprising surface to a material comprising silicon and nitrogen; the activated nitrogen being formed by exposing a nitrogen-containing precursor to a plasma maintained at a power of at least about 750 watts. Claim 6 is believed allowable over the cited

references for at least the reason that claim 6 recites exposing a silicon-comprising surface to activated nitrogen for 20 seconds.

The cited references do not teach or suggest a 20 second exposure element when describing the nitridation process. In particular, Chau merely states that a power of between 500 and 2000 watts can be utilized. No mention is made of a time requirement.

Claim 6 is therefore allowable for at least the reason that it recites a 20 second time element, and this limitation is neither taught nor suggested by the cited references. Applicant requests allowance of claim 6 is the Examiner's next action.

Claims 7-15 all depend from claim 6 and are therefore allowable for at least the reasons discussed above regarding claim 6.

Independent claim 16 recites a method of forming transistor devices that includes exposing a silicon-comprising surface to activated nitrogen for at least about 20 seconds. As described above, this element is neither taught nor suggested by the cited references.

Independent claim 16 is therefore allowable for at least the reason that it recites exposing nitrogen to the silicon-comprising surface for at least 20 seconds, and this limitation is neither taught nor suggested by the cited references. Applicant requests allowance of claim 16 in the Examiner's next action.

Claims 17-25 all depend from claim 16, and therefore are allowable for at least the reasons discussed above regarding claim 16.

Referring next to claim 26, the claim recites, in pertinent part, exposing silicon-comprising material to activated nitrogen to form a peak nitrogen concentration within the exposed dielectric material of at least about 15 atom percent. As stated above the cited references do not teach or suggest this claim limitation. Applicant requests allowance of claim 26 in the Examiner's next action.

Claims 27-35 all depend from claim 26, and therefore are allowable for at least the reasons discussed above regarding claim 26.

Lastly, with respect to the Examiner's rejections, claim 36 recites, in pertinent part, exposing a silicon-comprising surface to activated nitrogen for at least about 20 seconds. As stated above, the cited references do not teach or suggest this claim limitation. Applicant requests allowance of claim 36 in the Examiner's next action.

Claims 37-43 all depend from claim 36, and therefore are allowable for at least the reasons discussed above regarding claim 36.

With respect to the Examiner's notes regarding the Information Disclosure Statement filed October 15, 2001 and its non-compliance with 37 C.F.R. 198(a)(2). Applicant has enclosed herewith the copies of the references cited in the Information Disclosure Statement of October 15, 2001 for the Examiner's review. Applicant requests that the Examiner consider these references.

Finally, new claims 45-60 are believed patentable for at least the reasons discussed above.

Having addressed all of the issues raised by the Examiner in the last Action and proffered the patentability of new claims, this application is believed to be in immediate condition for allowance, and action to that end is requested.

Respectfully submitted,

Dated: 3/31/03

By: _____
Robert C. Hyta
Reg. No. 46,791

-END OF DOCUMENT-